Public Workshop to Discuss Reducing Emissions from Offroad Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards

Preliminary Survey Results

May 18, 2005

Sacramento, California

California Environmental Protection Agency

Air Resources Board

Cargo Handling Equipment Survey

- Conducted December 2004 / January 2005
- Purpose
  - obtain representative sampling
  - enhance off-road emissions inventory
  - aid in estimating emission reductions and cost of proposed regulatory strategies
- Participants
  - ports and intermodal rail yards
  - Ports of Los Angeles and Long Beach provided growth and emission control information (their inventories will be used for other equipment data)

What Did the Survey Ask?

- Equipment and engine data
  - make, model, year, fuel type, horsepower, average annual hours, repower and rebuild data
- Emission Control Equipment
  - type, year installed, cost of equipment and maintenance, grants applied
- Forecasted Growth
  - expected increases in equipment and hours for 2010 and 2020

Survey Responses

- 67 surveys received representing terminals, ports, and intermodal rail yards (approximate response rate: 66%)
- 100% response from the intermodal rail yards

Survey Summaries

Equipment Population

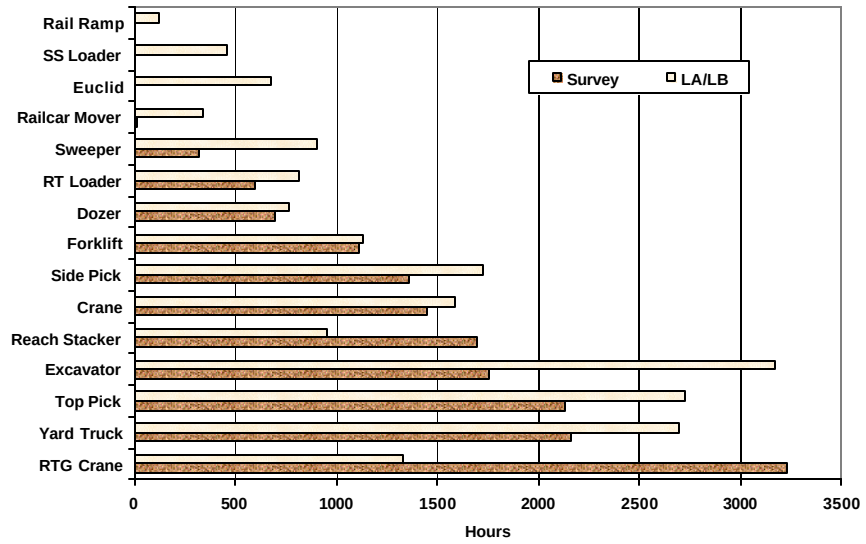
Equipment	Population
Yard Truck	1840
Forklift	354
Top Pick	256
RTG Crane	219
Side Pick	135
RT Loader	45
Crane	22
Dozer	22
Sweeper	18
Excavator	9
Euclid	8
Reach Stacker	7
SS Loader	7
Railcar Mover	6
Rail Ramp	3

Average Model Years and Useful Life

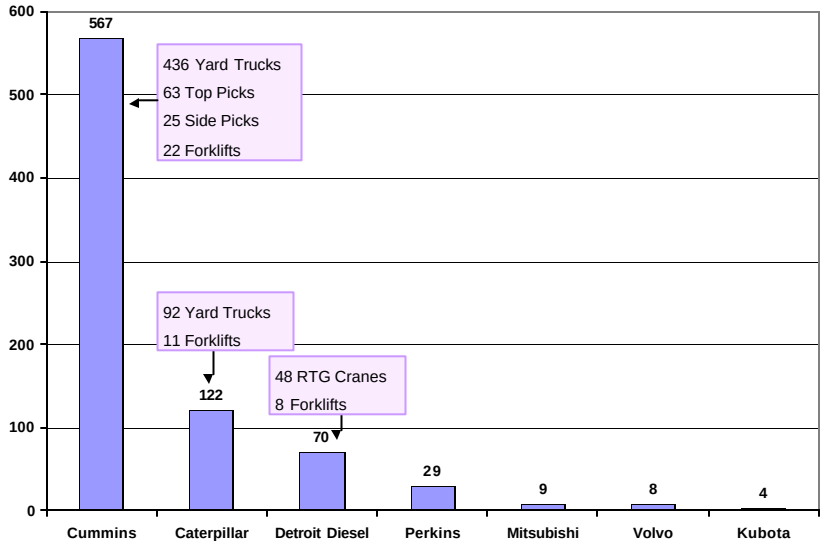
Equipment	Average Model Year	Useful Life	
		Average (Years)	# Surveys Reporting
Yard Truck	2000	10	35
Sweeper	1998	no data	0
Top Pick	1997	16	24
RTG Crane	1996	20	26
Side Pick	1995	15	22
RT Loader	1995	18	14
Reach Stacker	1995	18	4
Excavator	1992	8	2
Forklift	1991	16	43
Crane	1987	25	13
Dozer	1985	18	4
Railcar Mover	1962	no data	0

Average model year does not include data from the ports of Los Angeles and Long Beach.

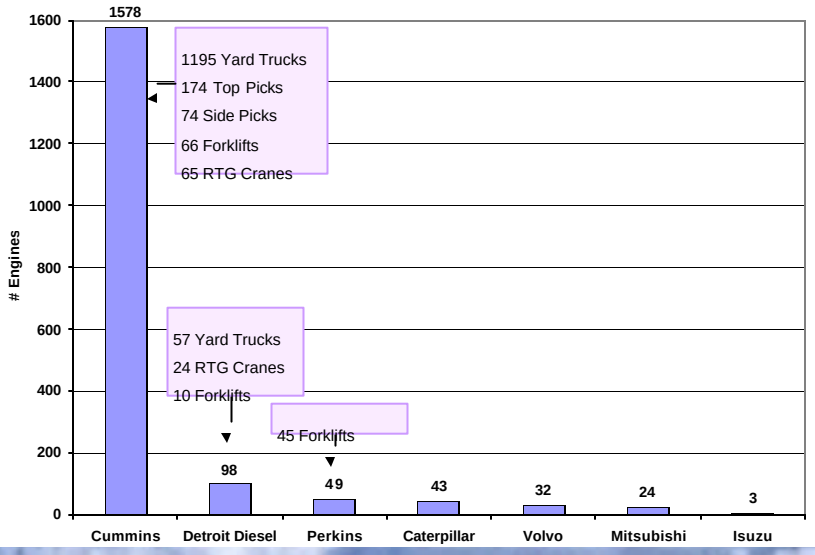
Average Annual Hours of Operation



Engine Manufacturers - Survey



Engine Manufacturers - LA/LB



Emission Controls

Equipment	DOCs	% of Equipment
Yard Truck	1192	65%
Top Pick	120	47%
Side Pick	46	34%
RTG Crane	30	14%
Forklift	29	8%
Reach Stacker	2	29%

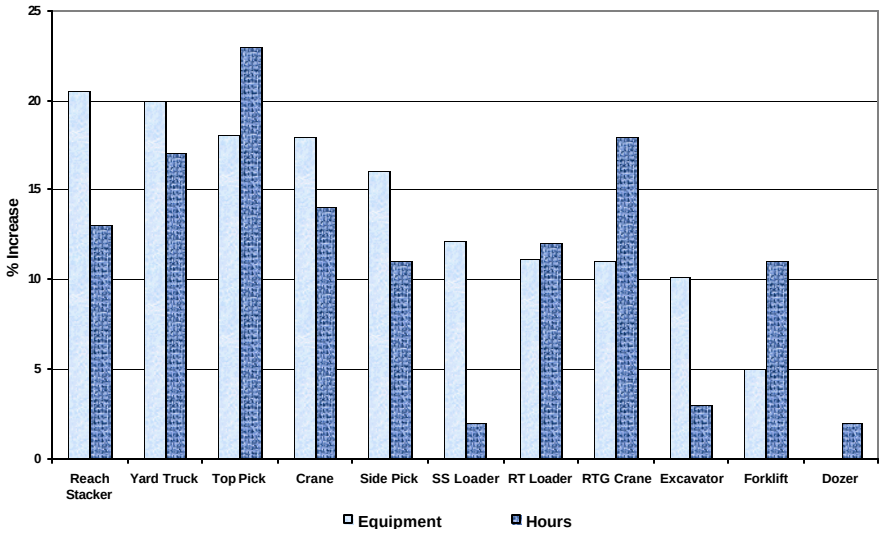
Notes:

1. Estimates based on survey results and POLA/POLB data
2. Some equipment also using emulsified diesel + DOC
3. Two reach stackers have DPFs applied; not included in this table

Emission Controls - Average Costs

Equipment	Avg Cost of DOC (incl. installation)	Avg Annual Maintenance Cost
Yard Truck	$1576	$754
Forklift	$1588	$427
Reach Stacker	$1910	$100
Top Pick	$1934	$1036
Side Pick	$2012	$472
RTG Cranes	$4282	$960

Survey Response: 2010 Average Estimated Increases in Equipment and Hours of Operation



Survey Response: 2020 Average Estimated Increases in Equipment and Hours of Operation